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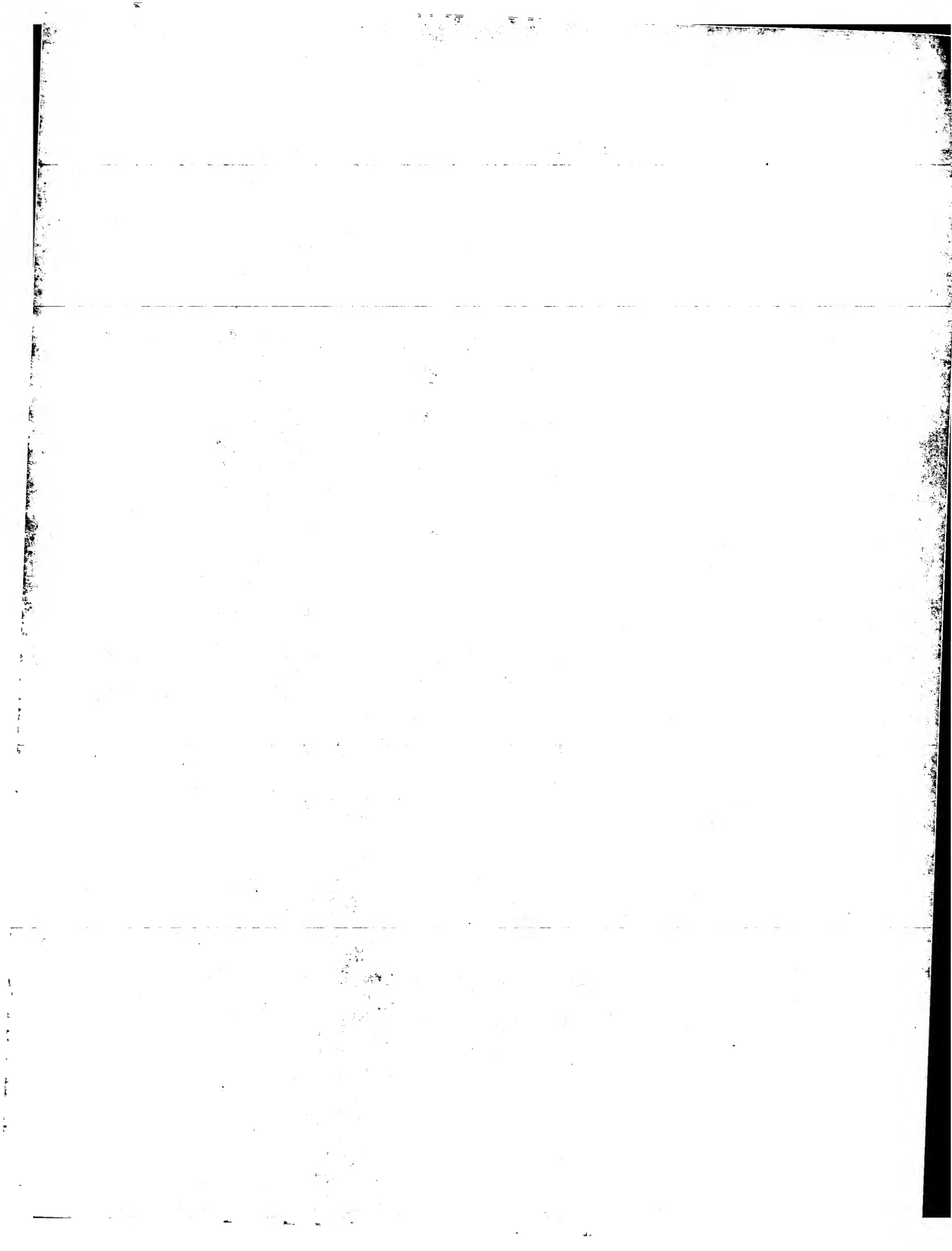
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## PATENT SPECIFICATION

413,464

Application Date: May 1, 1933. No. 12,584/33.

Complete Left: Jan. 17, 1934.

Complete Accepted: July 19, 1934.

PROVISIONAL SPECIFICATION.



### A Compression Tester and Fault Indicator, for Internal Combustion Engines.

I, PERCY WILLIAM ARCHER, of 1, Thirsk Terrace, Northallerton, Yorkshire, British nationality, do hereby declare the nature of this invention to be as follows:—

5 An instrument made to show by the air compression pressure in the cylinder head, when fitted in place of the sparking plug, whether there are compression faults, and  
10 if faulty showing the cause of the mechanical fault.

This tester or indicator, can be made in one piece, or more, but preferably in two portions, one the main portion which  
15 screws into the cylinder head in place of the sparking plug, and the other the gauge or indicator.

The main portion is a small casting or barrel made of brass (or other metal or  
20 substitute) with a small hole through the centre, both ends screwed, one to fit the sparking plug hole, and the other to choice. The top of this main portion is recessed to take nozzle end of the gauge.  
25 Two finger holds are cast on the casting for screwing and tightening this portion in the cylinder head, as if is only necessary for it to be hand tight. The other portion is the gauge the connector of which  
30 fits into the recess of the casting and is fastened by a knurled nut. The dial of this gauge, gives two readings, one the pressure in lbs. per square inch, and the other reading shows, whether the parts  
35 working in the cylinder head under test, are in good condition, or otherwise, and

if faulty, the mechanical parts that are faulty, this is done by the movable hand, actuated by the air pressure in the cylinder. This movable hand is held by a  
40 mechanical stop at the maximum reading, and is liberated by a press stud which returns the hand to zero.

The method of operation is as follows—  
45 The barrel portion is screwed into the cylinder head in place of the sparking plug, then the gauge (hand returned to zero) is connected and fastened by the knurled nut, face of the gauge being  
50 placed where it can be conveniently seen. With the ignition switched off the crankshaft is smartly rotated by the starting handle or other means, for a few revolutions then the movable hand, will show  
55 the condition of the moving parts in the cylinder, and if the compression is poor, the hand will show the faulty parts.

The dial of the gauge can be made if necessary to show the pressure in lbs. per square inch only, and a separate chart  
60 supplied to give the other reading, such as a certain air compression pressure, indicates a certain condition of the moving parts.

The apparatus affords a quick, reliable, and accurate way of finding out the condition of the moving parts, in the combustion chamber, of internal combustion engines.

Dated this 29th day of April, 1933.

P. W. ARCHER.

## COMPLETE SPECIFICATION.

### A Compression Tester, and Fault Indicator, for Internal Combustion Engines.

70 I, PERCY WILLIAM ARCHER, 1, Thirsk Terrace, Northallerton, Yorkshire, British Nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by  
75 the following statement:—

[Price 1/-] Price 4s 6d

My invention relates to a pressure gauge of the kind, which when placed in the cylinder head of an internal combustion engine, in place of the sparking plug, upon rotation of the crankshaft, indicates  
80 by means of a moving hand over the face of the dial of the gauge, the compression

pressure in lbs. per sq. inch. My invention comprises marking the dial of such a gauge with information giving the condition of this particular cylinder, with regard to wear, or mechanical fault, and showing the probable fault, if the compression is not up to the standard pressure.

The instrument consists of a small casting A and a gauge, Figs. 1 and 2 of accompanying drawings. This casting which is drilled and machined, as shown in the drawing, has two fingerholds C for tightening purposes. The gauge portion is connected to this casting by means of a knurled nut D. The dial of the gauge (two types of dials are shown Figs. 3 and 4) has the condition readings, and lbs. per sq. inch printed upon it.

The moving hand, or pointer, when actuated by the air pressure in the cylinderhead, is held at the maximum pressure by a mechanical stop, such as a pawl working upon a ratchet, and liberated by a press stud, which lifts the pawl from the ratchet and allows the hand to return to zero. An additional hand can be fitted for registering purposes, such as checking one cylinder against another, but is not desirable, as it does not make for simplicity, and increases the selling price, especially as the same purpose can be fulfilled by writing the readings of each cylinder upon a piece of paper. The dials may be coloured, or shaded such as colouring the low pressure divisions red.

I do not bind myself to use the exact words and divisions, as shown in Figs. 3 and 4 of the drawing.

Method of operation is as follows:— the casting A, fingerholds to the top, is screwed fingertight into the cylinderhead, in place of the sparking plug, then the gauge assembly is fastened on by screwing the nut D on to the casting, making certain that the dial is in a convenient position for viewing it, then with the ignition switch in the off position, rotate the crankshaft smartly, either by the starter for a second or two, or by the starting handle, and when this is done the moving hand of the gauge will indicate the condition of the moving parts in this combustion chamber, and if the compression is not what it should be, will indicate the probable mechanical fault. Upon pressing the release stud, the indicating hand will return to zero.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is a pressure gauge of the kind referred to, in which is indicated on a dial (by using the air pressure during compression stroke.) the compression pressure in lbs. per sq. inch, by means of a pointer held at maximum pressure as by a pawl and ratchet also the condition of the moving parts in the cylinderhead of an internal combustion engine, together with the probable mechanical fault if any substantially as shown in the accompanying drawings.

Dated the 16th day of January, 1934.

PERCY W. ARCHER.

[This Drawing is a reproduction of the Original on a reduced scale.]

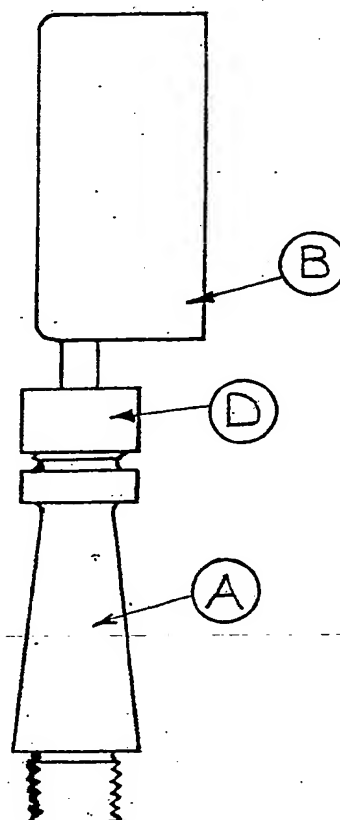
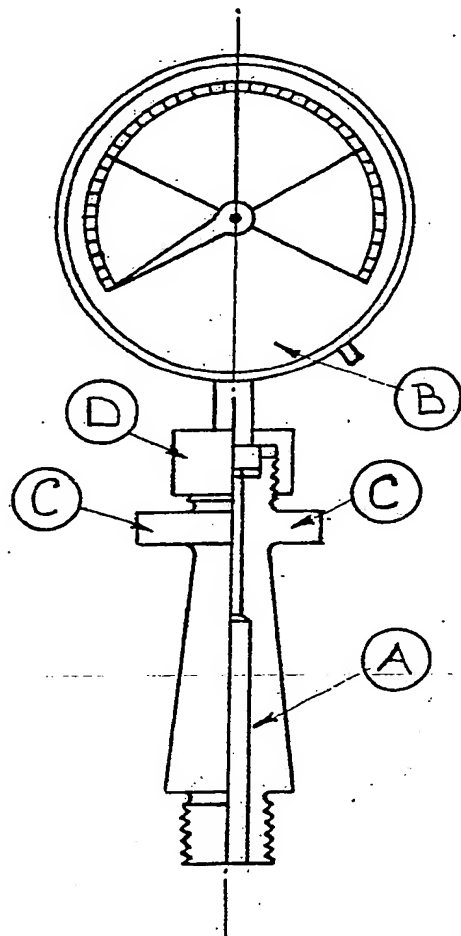


FIG 3

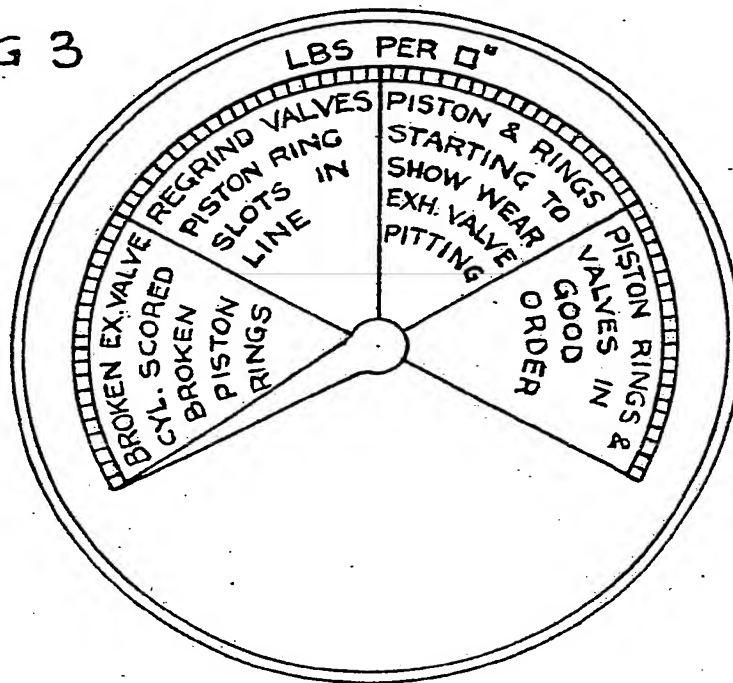
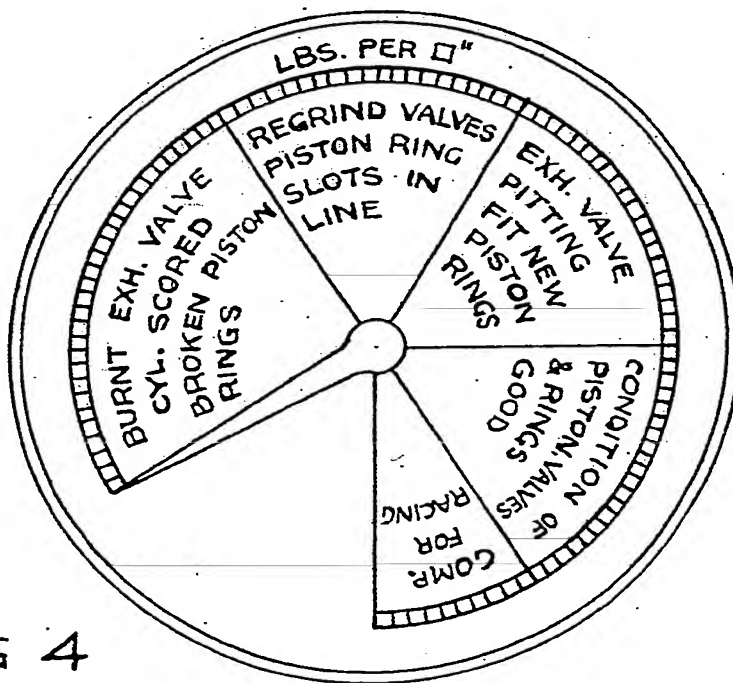


FIG 4



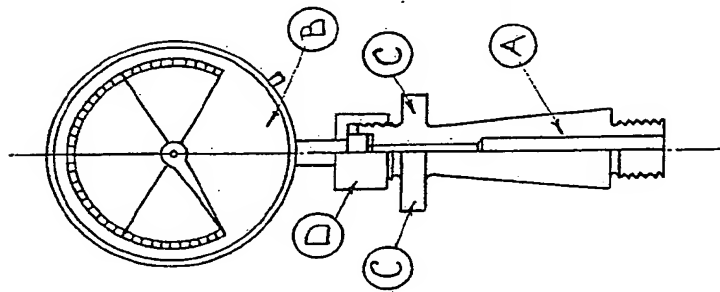


FIG 1

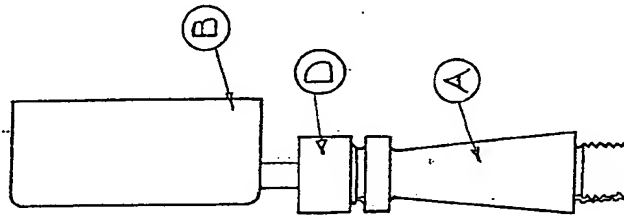


FIG 2

[This Drawing is a reproduction of the Original on a reduced scale.]

FIG 3

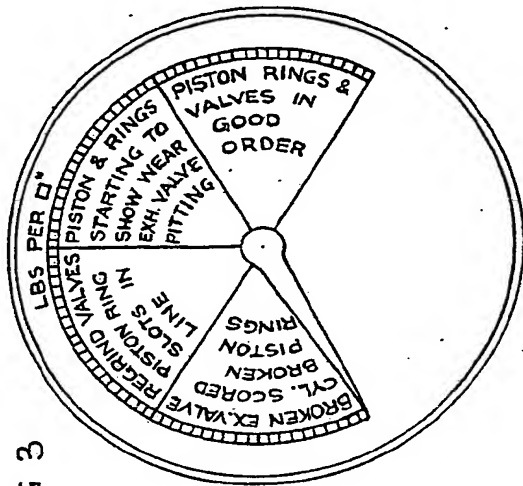


FIG 4

